

ABSTRACT OF THE DISCLOSURE

A method of cleaning a dual damascene structure. A first metal layer, a cap layer, and a dielectric layer are formed on a substrate in sequence. Then a dual damascene opening is formed in the dielectric layer and the cap layer, exposing the first metal layer. Then, a post-etching cleaning step is carried out to clean the dual damascene opening, and there are two types of cleaning methods. The first method uses a fluorine-based solvent to clean the dual damascene opening. An alternative cleaning method uses a hydrogen peroxide based solvent at a high temperature, followed by a hydrofluoric acid solvent cleaning step. Then, an argon gas plasma is sputtered to clean the dual damascene opening before a second metal layer fills in the dual damascene opening.